

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: GAECHTER, Jean-Pierre

SERIAL NO.: 10/524,298

ART UNIT: 3682

FILED: July 28, 2005

EXAMINER: Pilkington, J.

TITLE: MECHANICAL ACTUATOR INCLUDING A HELICAL-CAM NUT

Amendment A: REMARKS

Upon entry of the present amendments, previous Claims 1 - 18 have been canceled and new Claims 19 - 36 substituted therefor. Reconsideration of the rejections, in light of the forgoing amendments and present remarks, is respectfully requested. The present amendments have been entered for the purpose of more clearly distinguishing the present invention from the prior art and also for the purpose of placing the claim language into a more proper U.S. format.

In the Office Action, Claims 1 - 11 and 13 were rejected under 35 U.S.C. § 103(a) as being obvious over the Hogan patent in view of the Brusasco patent. Claim 12 was rejected as being obvious over the Hogan patent in view of the Brusasco patent and further in view of the Barrett patent. Claim 14 was rejected under 35 U.S.C. § 103(a) as being obvious over the Hogan patent in view of the Brusasco patent and further in view of the Gould patent. Claim 15 was rejected as being obvious over the Hogan patent in view of the Brusasco patent and the Gould patent and further in view of the Devenyi patent. Claim 16 was rejected as being unpatentable over the Hogan patent in view of the Brusasco patent and further in view of the Halasy-Wimmer publication. Claim 17 was rejected as being obvious over the Hogan patent in view of the Brusasco patent and further in view of the Yaple patent. Claim 18 was rejected as being obvious over the Hogan patent in view of the Brusasco patent and further in view of the Laskey patent. Claim 5 was rejected under 35 U.S.C. §

112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The claims were also objected to because of various informalities.

As an overview to the present reply, Applicant has revised Claims 1 - 18 in the form of new Claims 19 - 36, respectively. The new claims express the original limitations in a more proper U.S. format, including proper antecedent bases and proper structural interrelationships throughout. Any indefinite terminology found in the original claim language has been corrected herein.

In particular, new independent Claim 19 now specifies the "outer tubular body" and the "inner tubular body". It is further indicated that the "inner surface of said outer tubular body has helical ball race suitable for guiding said plurality of balls". Independent Claim 19 also specifies that the widened portion defines "a re-circulation zone for said plurality of balls". Applicant respectfully contends that these features serve to distinguish the present invention from the prior art.

Applicant notes that the prior art Hogan patent has been mentioned in the international search report. The claims of the U.S. application correspond with the claims of the corresponding European patent grant. In particular, with respect to Hogan patent, Applicant respectfully contends that the Hogan patent does not describe a nut including "helical ball races". Additionally, the Hogan patent fails to show a "ball recirculation zone". If such a structure actually existed, the balls act exclusively by the stress on the tube in which this nut is mounted. In fact, in the Hogan patent, the outer tubular body does not contain "helical ball races suitable for guiding said plurality of balls". As a result, preloading would be obligatory. Without preloading, no transmission of effort and, therefore, no movement is possible. As a result, the energy transmitted by such an actuator is limited by the coefficient of friction. As a result, the amount and strength of the transmission is very low.

The Brusasco patent describes a screw in the form of a tree on which is mounted a rolling groove defined by the spiral of a spring. The balls move by cooperation with the concave coils of the spring in association with a rolling groove in the nut. Because of the nature of the spring which defines the rolling groove on the screw, the pitch of the rolling groove can vary. As FIGURE 3 illustrates, a pair of nuts are mounted on this screw. Each of the nuts has a different pitch. On this basis, Applicant respectfully contends that one having ordinary skill in the art would not be likely to combine the teachings of the Hogan patent and the Brusasco patent in order to achieve the present invention.

The Hogan patent specifically teaches against equipping the tube of the device with a rolling groove on the inside surface. In particular, the object of the Hogan patent obtains the drive by friction with the outer tube. In contrast, the present invention allows an actuator device that creates transmission by friction, under the effect of a radial loading, into a positive drive actuator because of the placement of a rolling groove on the inside of the outer tube. As such, the present invention provides a particularly effective actuator at a relatively low cost. The design of the present invention is quite simplified over that taught by the combination of the Hogan and the Brusasco patents. The nut does not include any internal recirculation of the balls. This would be difficult to machine. In the present invention, the nut is a combination of a very easily manufactured components. As such, the ball recirculation zone is external. On this basis, Applicant contends that independent Claim 19 is patentable over the prior art combination.

Based upon the foregoing analysis, Applicant contends that independent Claims 19 is now in proper condition for allowance. Additionally, those claims which are dependent upon Claim 19 should also be in condition for allowance. Reconsideration of the rejections and allowance of the

claims at an early date is earnestly solicited. Since no new claims have been added above those originally paid for, no additional fee is required.

Respectfully submitted,

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